

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended) A plating apparatus, comprising:

a substrate holder capable of opening and closing for holding a substrate such that the front surface of the substrate is exposed while the back side and the edge thereof are hermetically sealed;

a plating tank for holding a plating liquid in which an anode is immersed;

a diaphragm provided in said plating tank and disposed between said anode and the substrate held by said substrate holder;

plating liquid circulating systems for circulating the plating liquid through the respective regions of said plating tank partitioned by said diaphragm; and

a deaerating unit provided in at least one of said plating liquid circulating systems for maintaining the concentration of dissolved oxygen in the plating liquid between 1 μ g/l (1ppb) and 4 mg/l (4ppm).

Claim 2 (Original) The plating apparatus according to claim 1, further comprising a monitoring unit disposed downstream of said deaerating unit for monitoring the concentration of dissolved oxygen in the plating liquid.

Claim 3 (Original) The plating apparatus according to claim 1, wherein said deaerating unit comprises at least a deaerating membrane and a vacuum pump, the pressure on the decompressed side of said deaerating unit being controlled.

Claim 4 (Original) The plating apparatus according to claim 3, further comprising a monitoring unit disposed downstream of said deaerating unit for monitoring the concentration of dissolved oxygen in the plating liquid.

Claim 5 (Original) A plating method, comprising;
providing a diaphragm between a substrate and an anode immersed in a plating liquid held in a plating tank;

circulating the plating liquid in each region of said plating tank partitioned by said diaphragm;
and

plating the substrate while maintaining the concentration of dissolved oxygen in the plating liquid between 1 $\mu\text{g/l}$ (1 ppb) and 4 mg/l (4 ppm) by a deaerating unit.

Claims 6-81 (Canceled)

Claim 82 (New) A plating apparatus, comprising:

a substrate holder capable of opening and closing and capable of holding a substrate at a substrate position such that the front surface of the substrate is exposed while the back side and edge of the substrate are hermetically sealed;

a plating tank operable to hold a plating liquid and having an anode to be immersed in the plating liquid;

a diaphragm in said plating tank disposed between said anode and the substrate position, said plating tank being partitioned into regions by said diaphragm;

plating liquid circulating systems for circulating the plating liquid through respective said regions of said plating tank; and

a deaerating unit in at least one of said plating liquid circulating systems operable to maintain the concentration of dissolved oxygen in said plating liquid between 1 $\mu\text{g/l}$ (1 ppb) and 4 mg/l (4 ppm).

Claim 83 (New) The plating apparatus of claim 82, and further comprising a monitoring unit downstream of said deaerating unit for monitoring the concentration of dissolved oxygen in the plating liquid.

Claim 84 (New) The plating apparatus of claim 82, wherein said deaerating unit comprises at least a deaerating membrane and vacuum pump and wherein pressure on a decompressed side of said deaerating unit is controlled.

Claim 85 (New) The plating apparatus of claim 84, and further comprising a monitoring unit downstream of said deaerating unit for monitoring the concentration of dissolved oxygen in the plating liquid.